Notice of Allowability	Application No.	Applicant(s)	
	10/821,126	SYRJARINNE, JARI	
	Examiner	Art Unit	
	David Q. Nguyen	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *12/10/07*.

2. ☒ The allowed claim(s) is/are *1,5-20,31-33,35-40 and 43(renumbered as 1-27, respectively)*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with Shiming Wu on 01/30/08.

3. The application has been amended as follows:

1. (Currently amended) Method, comprising:

receiving signals from physical communication channels in a mobile communication device, said signals including a first signal code and a carrier signal,

measuring a signal phase of said first signal code,

measuring a frequency shift of said carrier signal,

reducing a noise level of said measured signal phase by using said frequency shift, and

calculating a position of said mobile communication device using at least said noise level reduced signal phase, wherein said signal phase is a signal code phase;

wherein reducing said noise level of said measured signal code phase by using said frequency shift comprises filtering said measured signal code phase with said frequency shift.

2-4. (Canceled).

5. (Currently amended) The method of claim 1, wherein said measured frequency shift is a pseudodoppler frequency.

6. (Currently amended) The method of claim 1, wherein said frequency shift is obtained from an

accumulated carrier phase measurement.

7. (Currently amended) The method of claim 1, wherein said filtering is done by carrier smoothing.

8. (Currently amended) The method of claim 1, wherein a threshold value for estimating said signal code phase is defined.

9. (Currently amended) The method of claim 1, wherein the signal code phase of said first signal code is tracked and said frequency shift is obtained from a carrier and/or phase tracking loop.

10. (Previously presented) The method of claim 1, wherein said frequency shift is obtained from matched filter outputs within said mobile communication device.

11. (Original) The method of claim 1, wherein said physical communication channels are transmitted from ground based base stations.

12. (Previously presented) The method of claim 1, wherein said signal phase is transmitted from said mobile communication device to a base station.

13. (Previously presented) The method of claim 12, wherein said measured frequency shift is transmitted from said mobile communication device to said base station.

14. (Original) The method of claim 1, wherein said position is calculated within an underlying communications network.

15. (Original) The method of claim 1, wherein said position is calculated using a time of arrival calculation principle.

16. (Original) The method of claim 1, wherein said position is calculated using a time difference of arrival calculation principle.

17. (Previously presented) The method of claim 1, wherein at least position information of a base station is transmitted from said base station to said mobile communication device.

18. (Previously presented) The method of claim 1, wherein said first signal code is a pilot signal code.

19. (Previously presented) The method of claim 1, wherein a base station and said mobile communication device communicate utilizing a code division multiple access communication protocol.

20. (Original) The method of claim 1, wherein said position is calculated using a hybrid position calculation.

21-30. (Cancelled)

31. (Currently amended) System, comprising:

at least one base station for providing physical communication channels, and

at least one mobile communication device,

wherein said mobile communication device comprises:

a receiver for receiving communication signals within said physical communication channels,

a first signal processor for measuring a signal phase of a first signal code received within said physical communication channels,

a second signal processor for calculating a frequency shift from a carrier signal received within said physical communications channels, and

a calculation device for calculating a noise level reduced signal phase by using said frequency shift,

wherein the system further comprises:

a position calculation device for calculating a position of said mobile communication device using at least said noise level reduced signal phase, wherein said signal phase is a signal code phase; wherein reducing said noise level of said measured signal code phase by using said frequency shift comprises filtering said measured signal code phase with said frequency shift.

32. (Currently amended) Computer program product, comprising a computer-readable medium storing program codes thereon for use in a mobile communication device, said program codes comprising: instructions for receiving signals from physical communication channels within the mobile communication device, said signals including a first signal code and a carrier signal,

instructions for measuring a signal phase of said first signal code,

instructions for measuring a frequency shift from the carrier signal received from said physical communications channels, and

instructions for reducing a noise level of said measured signal phase by using said frequency shift, wherein said signal phase is a signal code phase; wherein said instructions for reducing said noise level of said measured signal code phase by using said frequency shift comprises instructions for filtering said measured signal code phase with said frequency shift.

33. (Previously presented) The computer program product of claim 32, wherein the program codes further comprise:

instructions for calculating a position of said mobile communication device using at least said noise level reduced signal phase.

34. (Canceled)

35. (Previously presented) The method of claim 1, wherein the carrier signal is received within a communication channel of the physical communication channels.

36. (Previously presented) The method of claim 1, wherein the first signal code is received within a pilot channel of the physical communication channels.

37. (Previously presented) The system of claim 31, wherein the first signal processor measures the signal phase of the first signal code received within a pilot channel of the physical communication channels.

38. (Previously presented) The system of claim 31, wherein the second signal processor calculates the frequency shift of the carrier signal received within a communication channel of the physical communication channels.

39. (Previously presented) The computer program product of claim 32, wherein the first signal code is received within a pilot channel of the physical communication channels.

40. (Previously presented) The computer program product of claim 32, wherein the carrier signal is received within a communication channel of the physical communication channels.

41-42. (Canceled).

43. (Currently amended) A mobile communication device, comprising:

means for receiving communication signals in physical communication channels,

means for measuring a signal phase of a first signal code received within said physical communication channels,

means for calculating a frequency shift from a carrier signal received within said physical communications channels, and

means for calculating a noise level reduced signal phase by using said frequency shift, and

means for calculating a position of said mobile communication device using at least said noise reduced signal phase, wherein said signal phase is a signal code phase;
wherein reducing said noise level of said measured signal code phase by using said frequency shift comprises filtering said measured signal code phase with said frequency shift.

Allowable Subject Matter

4. Claims 1, 5-20, 31-33, 35-40 and 43 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding independent claims 1,31,32 and 43, Chansarkar (WO 03/034090 A2).and Akopian et al. (US 6,771,215 B2) and Asher et al. (US 2003/0201934 A1) teach a method, a mobile communication equipment, a system, a computer program embodied in a computer readable medium and a module in communication with receiver of a mobile communication equipment for calculating a position of a mobile communications equipment, by receiving signals from physical communication channels in a mobile communication device, said signals including a first signal code and a carrier signal(see par. 0006 and pars. 0017-0035), measuring a signal phase of said first signal code (see par. 0006 and pars. 0017-0035), reducing a noise level of said measured signal phase by using said carrier signal (see par. 0006 and pars. 0017-0035), and calculating said position of said mobile communications equipment using at least said noise level reduced signal phase (see par. 0006 and pars. 0017-0035). The above prior of record, however, fail to disclose or render obvious wherein said signal phase is a signal code phase; wherein reducing said noise level of said measured signal code phase by using said frequency shift comprises filtering said measured signal code phase with said frequency shift, as specified in the claims.

Claims 5-20 and 35-36 are allowed because they depend on claim 1.

Claims 37-38 are allowed because they depend on claim 31.

Claim 33 and 39-40 are allowed because it depends on claim 32.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

McLeod et al. (US 7,221,696 B1) teach communication system and method for acquiring Pseudonoise codes or carrier signals under conditions of relatively large chip rate uncertainty.

Lennen (US 6,091,785) teaches receiver having a memory based search for fast acquisition of a spread spectrum signal.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Q. Nguyen whose telephone number is 571-272-7844. The examiner can normally be reached on 8:30AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOSEPH H. FEILD can be reached on (571)272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David Q Nguyen
Examiner
Art Unit 2617

JOSEPH FEILD
SUPERVISORY PATENT EXAMINER